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USGS Investigates Tungsten in Ground Water at a Childhood Leukemia Cluster near the Naval Air Station Fallon, Nevada

The USGS is investigating the sources of tungsten and the processes that lead to high concentrations of tungsten in ground water in Fallon, Nevada, the location of the Naval Strike and Air Warfare Center at Naval Air Station (NAS) Fallon. Tungsten in the environment, and potential adverse health effects from exposure to it, are of concern to the Department of Defense (DoD) because the U.S. Armament Research, Development and Engineering Center (ARDEC) is in the final stages of developing a bullet that replaces the lead core with tungsten-tin or tungsten-nylon. U.S. Centers for Disease Control and Prevention (CDC) have nominated tungsten for toxicological evaluation as a result of their investigation of a childhood leukemia cluster in Fallon.

In May 2003, the U.S. Army Environmental Center sponsored a workshop to review current work on tungsten and identify additional information needs. Ralph Seiler, USGS Water Resources Discipline, Nevada District, participated in the workshop and described what was then known about why elevated tungsten concentrations occur in Fallon-area ground water.

Tungsten concentrations in drinking water wells in the Fallon area ranged from 0.27 to 742 µg/L. The principal sources of tungsten are natural, and include upwelling geothermal water in an area centered on the NAS at Fallon, and erosion of mineral deposits in the Carson River watershed upstream from Fallon. The strong reducing conditions in the aquifer also may be dissolving iron and manganese oxides and releasing adsorbed tungsten. Evaporation of infiltrated Carson River water can explain tungsten concentrations in many wells; however, results of geochemical modeling indicate adsorption and desorption also are important controls on tungsten concentrations.

An article describing the results of the USGS investigation currently is being prepared for a scientific journal. For further information concerning the USGS investigation of tungsten at NAS Fallon, contact Ralph Seiler (rseiler@usgs.gov). Information pertaining to the development of the tungsten bullet may be obtained at the following web site (http://aec.army.mil/usaec/publicaffairs/update/fall99/fall9901.htm).

USGS Manages Federal Cartographic Services Contract

The USGS serves as a contracting mechanism for photogrammetric and mapping services through a Federal

Architect-Engineer contract that can accommodate any activity related to standard, nonstandard, graphic, and digital cartographic products. Services provided may include, but are not limited to, photogrammetric mapping and aerotriangulation; orthophotography; thematic mapping; analog and digital imagery applications; geographic information systems development; surveying and control acquisition, including ground-base and airborne Global Positioning System; analog and digital image manipulation, analysis, and interpretation; raster and vector map digitizing; primary and ancillary data acquisition; image scanning and processing; metadata production, revision, and creation; and production or revision of standard USGS products defined by formal and informal specifications and standards, such as those for digital line graphs, digital elevation models, digital orthophoto quadrangles, and digital raster graphics.

The Cartographic Service Contract (CSC) gives customers quick access and one-stop shopping to the professional services that they require. USGS contractors are selected through a qualification-based competitive process. USGS personnel are available to help agencies write standards, specifications and task orders, conduct negotiations, perform quality assurance, and validate the contractor-produced data. Resident expertise in the geographic sciences and the use of independent Government cost estimates for each task ensures that fair market values for services are obtained. USGS currently charges a 5-percent administrative fee for using this contracting mechanism. For further information about the CSC and how it can benefit your agency, please contact Robert Kelly (ckelly@usgs.gov), Eric Constance (constance@usgs.gov) , or Emitt Witt (ecwitt@usgs.gov) .

USGS Demonstrates SOLDGR at GPC Ribbon Cutting

The USGS demonstrated the **S**trategic **O**n-**L**ine **D**efense **G**eography **R**epository (**SOLDGR**) at the ribbon cutting for the Geospatial Partnering Center (GPC) at Ft. Leonard Wood, Missouri. More than 100 individuals from local universities, Federal, state, and local agencies, the U.S. Army, and industry were in attendance. Senator Jim Talent (R-MO) and Major General Van Antwerp were among the VIP attendees that observed the on-line demonstration. KRCC-TV (Jefferson City, MO) highlighted the SOLDGR project as "having the potential to serve both the military and first responders in Missouri." SOLDGR is now available to its potential data-sharing partners during the development and testing phase. For more information about SOLDGR, please contact Emitt Witt (ecwitt@usgs.gov).

Quality of Water in the Unsaturated Zone at Camp Shelby, Mississippi

The Mississippi Military Department continues to take a strong leadership role in environmental and natural-resource stewardship while striving to balance the environmental impacts, public and agency concerns, and the ability of the

Mississippi Army National Guard (MSARNG) to complete its mission.

During 2002-04 the U.S. Geological Survey (USGS), in partnership with the MSARNG, conducted an investigation to determine the quality of water in the unsaturated soil zone outside the central firing range impact area at Camp Shelby.

The USGS installed and collected water samples from shallow soil-water samplers, perennial streams, and several shallow monitoring wells during the investigation. Results of laboratory analysis indicated that most organic compounds in water were below the minimum detection level (MDL); a few compounds identified at the MDL were substantially below the analytical reporting level. Metallic ions were generally within the concentration range of the control samples with the exception of aluminum, arsenic, barium, cobalt, iron, manganese, silver, and tin. Specific information on the results of this investigation may be obtained by contacting the USGS and National Guard principal investigators, Larry J. Slack (ljslack@usgs.gov) and R. Brian Neely (robert.neely@ms.ngb.army.mil).

USGS and US Army COE Partner on Digital Imagery Research

The USGS and the US Army Corps of Engineers (COE), New Orleans District, are conducting research that will lead to the development of specifications for digital imagery. Using specific sample areas over Lake Quitman, LA, the investigators are performing a series of qualitative comparisons of digital imagery with black and white orthoimages, the USGS digital orthophoto quarter quadrangles, LIDAR data, USGS 1:24000 scale digital raster graphics, and survey traverses. The criteria used for this comparison includes shadow detail, bright area detail, number of defects, feature interpretability, feature tracking, and overall appearance. Results of this experiment are expected to be available this fiscal year. For additional information about this effort, please contact Phil Rufe (prufe@usgs.gov).

USGS Identifies Occurrences of Natural Perchlorate in Arid Regions of the Southwestern US

The geochemistry and climatic conditions of desert regions can lead to the formation of numerous compounds of scientific interest. Naturally occurring perchlorates have been known to occur in the nitrate deposits of Chile's Atacama Desert for more than 100 years. Arid areas of the southwestern US have many climatologic and geologic factors similar to those of the Atacama Desert, including natural nitrate occurrences and numerous playas. Recent studies by the USGS in cooperation with the US Air Force have detected perchlorate in samples from playas and desert soils and caliches of the arid southwest.

Perchlorate was detected in at least five playas in three southwestern states and ranged from 17-112 µg/kg (ppb). These preliminary findings suggest that the natural formation of perchlorate is not limited to the extreme conditions of the Atacama Desert, and that other desert regions may have conditions conducive to the formation and accumulation of natural perchlorate. In addition, perchlorate has been detected in three samples of older marine evaporites.

Marine evaporites underlie large areas of the southwestern US. Perchlorate from these geologic materials may contribute to the low-levels of perchlorate detected in some areas of the southwest for which no anthropogenic source can be recognized. For further information about this work, please contact the principal investigator Greta J. Orris (orris@usgs.gov).

USGS-DoD Environmental Program Conference to Highlight Perchlorate Science

The USGS-DoD Environmental Program conference to be held in Biloxi, MS May 4-7, 2004 will dedicate a breakout session on the topic of perchlorate. Specific presentations and speakers include:

Natural perchlorate occurrence in rocks, Dr. Greta Orris, USGS Geologic Discipline, Minerals Management Program

Perchlorate in leaves of Salt Cedar (*Tamarix ramosissima*) in an ephemeral riparian environment, White Sands National Monument, New Mexico, Mr. Rick Huff, USGS Water Resources Discipline, New Mexico District

Definitive low-level analysis for perchlorate in challenging environmental samples, Mr. Larry Penfold, STL Denver Laboratory

The antagonistic role of perchlorate and iodide in delayed metamorphosis of frogs, USGS Biological Resources Discipline, Mr. Don Sparling, Patuxent Wildlife Research Center, Maryland

Attendance at this event is open to all USGS and DoD federal and contract employees. There is no conference registration fee, but a hospitality fee ($30) will be collected at the beginning of the conference. The conference will be held at the Isle of Capri Casino Resort in Biloxi, MS (1-866-475-3847). Hotel reservations must be secured by April 9th to obtain the special conference rate. A formal conference announcement may be obtained by linking to http://dodesp.er.usgs.gov/ or by contacting Emitt Witt (ecwitt@usgs.gov).

John Powell Retires

When you reach "that age" it doesn't take long to figure out new life possibilities. With less than a minute to spare after his 60th birthday, John chose retirement and has maintained a permanent smile ever since. After serving in the U.S. Army, as a school teacher in North Carolina, and a USGS hydrologist, John decided to hang up his DODEC hat and retire back to North Carolina. John has agreed to help with the upcoming USGS-DoD Conference in May. This may be your last opportunity to tell him what you really think!

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